

Application No.: 10/552,532
Amendment Dated: April 3, 2009
Reply to Office Action of: December 3, 2008

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Amendments to the Drawings:

The attached sheet of drawing includes changes to Fig. 3. This sheet replaces the original sheet.

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Remarks/Arguments:

Claims 1-8 are pending in the above-identified application. By the present Amendment, claims 1 and 2 are amended and new claim 8 is presented for consideration.

Interview Summary

Applicant's Representative thanks the Examiner for the courtesies extended during a telephone interview conducted on March 3, 2009. During the interview, Applicant's Representative discussed features of claim 1 and asserted that such features are not disclosed or suggested by the references cited against the claim in the Office Action. Applicant's Representative also proposed features to be added to the claim. The Examiner requested that such features be illustrated in a revised Figure filed in this response. Agreement was not reached.

Revised Figure

As mentioned above, during the telephone interview, the Examiner requested that Applicant file a revised figure illustrating features of the invention. By the present Amendment, Applicant submits an amended Fig. 3 in the above-identified application. By the present Amendment, Applicant also amends the specification of the above-identified application to add reference numbers for recitations of "inner rim" and "outer rim." Bases for these amendments are found throughout the above-identified application, for example, on page 5, line 16 through page 6, line 5; page 7, lines 9-14; and Fig. 2. No new matter has been added. Favorable consideration is respectfully requested.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 2 and its dependent claims 6 and 7 are rejected under 35 U.S.C. § 112, second paragraph, for being indefinite. Specifically, the Office Action objects to the recitation of "the reverse leading groove of which first end communicates with the centrifugal pump." The Office Action asserts that there is insufficient antecedent basis for this recitation. By the present Amendment, Applicant amends claim 2 to clarify the wording of the claim and to delete features thereof that are added to claim 1 by the

present Amendment. Withdrawal of the rejection and favorable reconsideration of the claim are respectfully requested.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-7 are rejected under 35 U.S.C. § 103(a) as being obvious over Japanese Publication No. S62-44108 of Nobuo et al. ("Nobuo") in view of U.S. Patent No. 6,457,561 to Goodnight and U.S. Patent No. 5,971,724 to Choi. To expedite prosecution, Applicant amends claim 1 by the present Amendment. For the reasons set forth below, Applicant respectfully contends that neither Nobuo, nor Goodnight, nor Choi, nor any combination of these references discloses or suggests all the features of claims 1-7.

Claim 1 recites features which are neither disclosed nor suggested by Nobuo, Goodnight, or Choi, alone or in combination, namely:

wherein the annular lubricant groove has an inner rim and an outer rim, and each of the second end of the forward leading groove and the second end of the reverse leading groove opens to the inner rim of the annular lubricant groove.

These features are found throughout the originally filed application and particularly, for example, on page 5, line 16 through page 6, line 5; page 7, lines 9-14; and Fig. 2. No new matter has been added.

1. Summary of embodiments of the above-identified application

The above-identified application describes a compressing mechanism 111 having a shaft 127 that comprises a forwarding leading groove 137 and a reverse leading groove 139. (See Application, page 4, lines 3-5 and 10-13.) The bottom end of the forwarding leading groove 137 communicates with a centrifugal pump 133. (See Application, page 4, lines 16-18.) The top end of the forward leading groove 137 opens directly to an inner rim of an annular lubricant groove 141. (See Application, page 4, lines 16-18 and page 7, lines 11-12.) The bottom end of the reverse leading groove 139 opens directly to a thinner section 135 of the shaft 127. (See Application, page 4, lines 18-19.) The top end of the reverse leading groove 139 also opens

directly to the inner rim of the annular lubricant groove 141. (See Application, page 4, lines 19-20 and page 5, lines 26-27.)

During forward operation, lubricant is transported to the forward leading groove 137 via a centrifugal pump and then along the forward leading groove 137 to the annular lubricant groove 141. (See Application, page 5, lines 12-15.) Because both the forward leading groove 137 and the reverse leading groove 139 open to the inner rim of the annular lubricant groove 141, the lubricant is pushed to an outer rim of the annular lubricant groove 141 from the forward leading groove 137. (See Application, page 5, line 16 through page 6, line 2.) Flow of lubricant back into the reverse leading groove 139 is minimized. Features of the inner and outer rims are illustrated in amended Fig. 3.

During reverse operation, lubricant is transported to the reverse leading groove 139 and then along the reverse leading groove 139 to the annular lubricant groove 131. (See Application, page 6, lines 22-26.) Because both the forward leading groove 137 and the reverse leading groove 139 open to the inner rim of the annular lubricant groove 141, the lubricant is pushed to the outer rim of the annular lubricant groove 141 from the reverse leading groove 139. (See Application, page 7, lines 1-14.) Flow of lubricant back into the forward leading groove 137 is minimized.

2. The cited references do not disclose or suggest the features of claim 1 relating to the "inner rim."

By the present Amendment, Applicant amends claim 1 to recite "wherein the annular lubricant groove has an inner rim and an outer rim, and each of the second end of the forward leading groove and the second end of the reverse leading groove opens to the inner rim of the annular lubricant groove." Basis for these features may be found in the originally filed application, e.g., at page 5, line 16 through page 6, line 5 and page 7, lines 9-14. Further, by the present amendment, Application also amends claim 1 to clarify the features of the claim, namely those relating to the forward and reverse leading grooves. Basis for these amendments may be found in the originally filed application, e.g., at page 4, lines 17-19. Applicant respectfully asserts that neither Nobuo, nor Goodnight, nor Choi, nor any combination of these references discloses or suggests the above-quoted features of claim 1.

The Office Action asserts that Nobuo discloses an annular lubricant groove. (See Office Action, page 4, top.) Applicant respectfully asserts that Nobuo does not disclose or suggest that its annular lubricant groove "has an inner rim and an outer rim, and each of the second end of the forward leading groove and the second end of the reverse leading groove opens to the inner rim of the annular lubricant groove." The Office Action does not assert that either Goodnight or Choi discloses an annular lubricant groove. Accordingly, Applicant respectfully asserts that neither Nobuo, nor Goodnight, nor Choi, nor any combination of these references discloses or suggests the above-quoted features of claim 1. Withdrawal of the rejection of claim 1 and reconsideration and allowance of the claim are respectfully requested.

As described above, the above-identified application describes that ends of a forward leading groove and a reverse leading groove open to an inner rim of an annular lubricant groove. (See Application, page 5, line 12 - page 6, line 2 and page 7, lines 9-14.) During operation, lubricant from the forward or reverse leading groove is deposited into the annular lubricant groove at the inner rim and is forced out to the outer rim via centrifugal forces. (See Application, page 5, line 27 through page 6, line 2 and page 7, line 12-14.) By opening to the inner rim of the annular lubricant groove, the forward and reverse leading grooves minimize the amount of lubricant flowing back into them during forward and reverse operation. Because Nobuo does not that its annular lubricant groove includes inner and outer rims nor that the forward leading groove described therein opens to such an inner rim, Nobuo does not describe that the amount of lubricant flowing back into its forward leading groove is minimized. Accordingly, Nobuo does not include the advantages provided by claim 1. Withdrawal of the rejection of claim 1 and reconsideration and allowance of the claim are respectfully requested.

New Claim 8

By the present Amendment, Applicant submits a new claim 8 for consideration. New claim 8 recites further features of the "bearing" recited in claim 1, namely, that "an entire rounding section of the upper end of the bearing is chamfered and the annular lubricant groove is formed between the chamfered section and the main shaft." Basis for these amendment may be found in the originally filed application,

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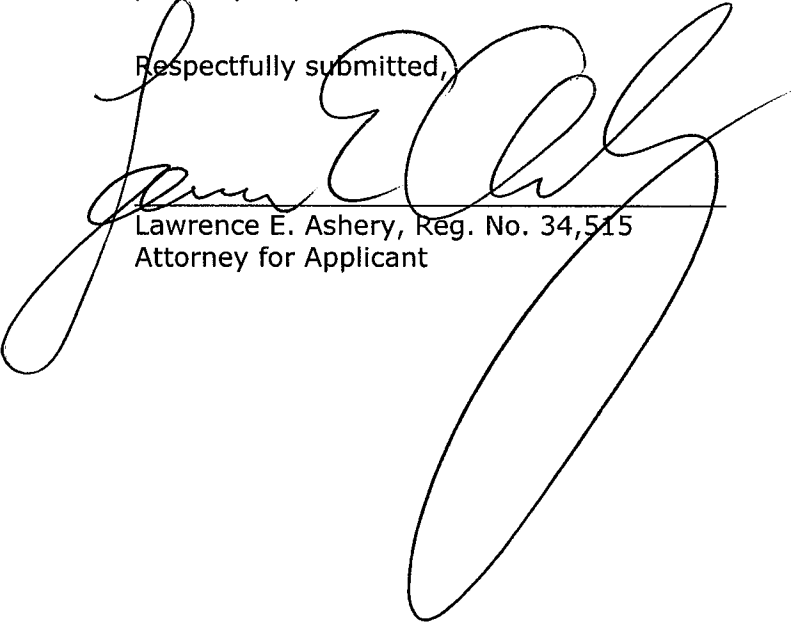
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e.g., at page 4, lines 13-15. Although Nobuo discloses an annular lubricant groove, as asserted in the Office Action, Nobuo does not disclose a chamfer and that the "annular lubricant groove is formed between the chamfered section and the main shaft." Favorable consideration of new claim 8 is respectfully requested.

Conclusion

Applicant respectfully asserts that the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,


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PKZ/pkz/fp

Attachment: Fig. 3 (1 sheet)

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